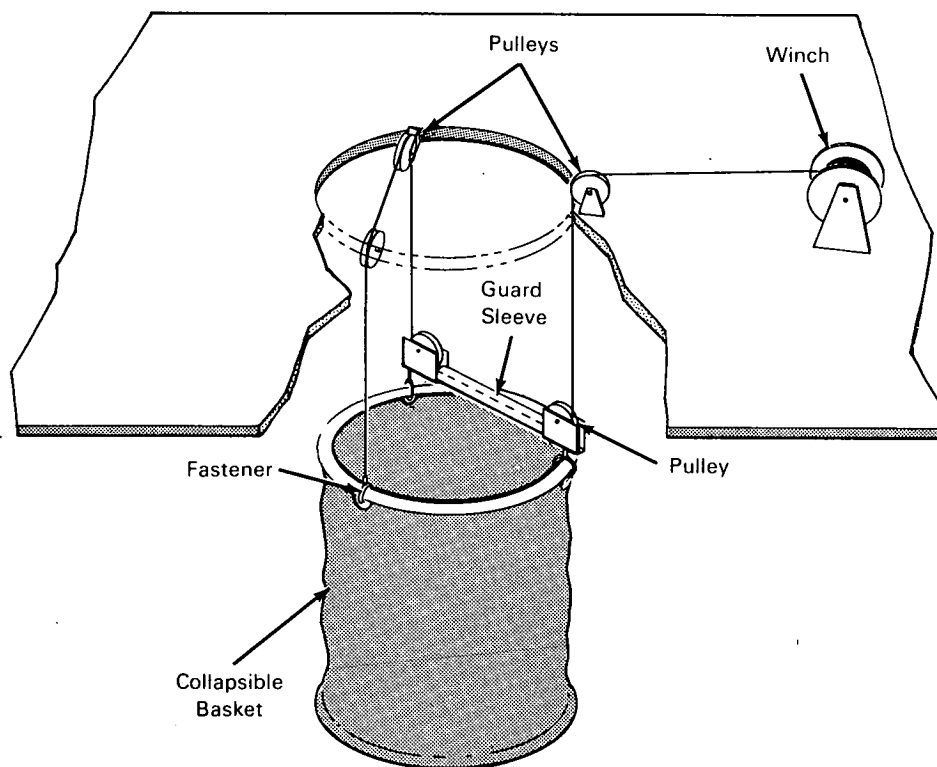


NASA TECH BRIEF



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Space-Saving Hoist for Tank Manholes



The problem:

The area of an overhead manhole of a deep tank is often severely limited for the passage of men and equipment. Access is still-further restricted by the rigging and operation of a hoist. The need for men with equipment to enter and clean the fuel and oxidant tanks of the Saturn II is an example of this difficulty.

The solution:

A working platform is rigged, above and clear of the tank (which is vulnerable), having a square hole in its

center directly over the manhole; the dimensions of the hole equal or slightly exceed the diameter of the manhole. On the platform a winch (powered or manual) is mounted opposite the center of one side of the square hole where a pulley is fixed that leads over the edge of the hole. A pair of pulleys, one at each of the two corners of the hole that oppose this pulley, are mounted leading both toward each other and down through the hole.

The collapsible basket (or bucket) used consists of a steel ring, at its top, to which the fabric sides and

(continued overleaf)

bottom of the basket are roven; inside the bottom of the basket is a fiberglass disk. At each of two of three equidistant points on the top ring of the basket an idling pulley is mounted; at the third point will be fixed the end of the winch's cable.

From the winch the cable is laid over the nearest pulley on the platform; roven through one idler on the basket, through a guard tube between the idlers, through the second idler, and through the pair of opposed pulleys on the platform; and made fast at the third point on the periphery of the basket. Thus the basket is suspended at three points without the rig impinging significantly on the area of the manhole. One may enter the basket by ladder.

For many industrial applications the rig could be much simpler, especially when the top of the tank is robust enough to bear men and equipment. Then there would be no need for a platform. The first pulley could be dispensed with; the winch could be clamped at the edge of the manhole, at one of three equidistant points on its periphery; and the other two tank-top pulleys could be clamped at the other two equidistant

points. Alternatively the winch could be mounted on a portable steel tripod or other frame directly over the edge of the manhole.

Notes:

1. This information may interest oil, shipping, or railroad companies; and producers of chemicals, gas, or electricity.
2. Documentation is available from the:
Clearinghouse for Federal Scientific
and Technical Information
Springfield, Virginia 22151
Price \$3.00
TSP69-10180

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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